



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/796,955

03/10/2004

Richard M. Manderscheid

WJT002-0040

4500

24587

7590

10/26/2005

ALCATEL USA
INTELLECTUAL PROPERTY DEPARTMENT
3400 W. PLANO PARKWAY, MS LEGL2
PLANO, TX 75075

EXAMINER

BLEVINS, JERRY M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 10/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/796,955

Applicant(s)

MANDERSCHIED, RICHARD M.

Examiner

Jerry Martin Blevins

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-11, 13-16, 18-30 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11, 13-16, 19-30 and 32 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/10/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/19/2005

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments, see page 8, filed 08/16/2005, with respect to the rejection(s) of claim(s) 1,2,5-8,13,28-30, and 32 under 35 USC 102 and of claim(s) 3,9-11,14-16, and 19-27 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of US Patent to Buchter, number 6,536,957. Since the new grounds of rejection are not necessitated by amendment, this action is non-final.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Buchter.

Regarding claim 1, Buchter teaches an optic triplexer (Figure 3, and see, for example, column 4, lines 23-40) comprising an emitting laser (143b), a first photodiode and a second photodiode (included in photodiode array 11, see Figure 5 elements 113a, 113b), wherein the first and the second photodiode are monolithically integrated

on a substrate (101); and a thin film filter (123) between the emitting laser and one of the first and second photodiodes.

Regarding claim 2, Buchter teaches the limitations of the base claim 1. Buchter also teaches that the emitting laser is monolithically integrated on the substrate (Figure 3).

Regarding claim 28, Buchter teaches an optic device (Figure 3) comprising an emitting laser (143b), at least one photodiode (11) that is monolithically integrated on a substrate (101); and a thin film filter (123) located between each pair of photodiodes if any and between the emitting laser and one of the first and second photodiodes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 29, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buchter in view of US Pre Grant Publication to Kondo, number 2004/0007709.

Regarding claim 3, Buchter teaches the limitations of base claim 1. Buchter does not teach that the emitting laser is placed on one of the photodiodes. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph

41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Buchter on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Regarding claims 29 and 30, Buchter teaches the limitations of the base claim 28. Buchter does not teach that the emitting laser is monolithically integrated and placed on top of the last photodiode that was monolithically integrated on the substrate. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Buchter on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Regarding claim 32, Buchter teaches a method for making an optic device (shown in Figure 3) comprising the steps of providing a substrate (101), monolithically forming at least one photodiode (111) on the substrate, and forming a thin film filter (123) between each pair of photodiodes if any and between an emitting laser (141) and the last photodiode that was monolithically integrated on the substrate. Buchter does not teach placing/monolithically forming the emitting laser on top of the last formed photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to

Art Unit: 2883

one of ordinary skill in the art at the time of the invention to place the laser of Buchter on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buchter in view of US Pre Grant Publication to Bartur et al., number 20030147601.

Regarding claim 5, Buchter teaches the limitations of the base claim 1. Buchter does not teach a thin film filter located between the first and the second photodiode. Bartur teaches a triplexer comprising a thin film filter (Figure 2C, element 213 and paragraph 27) located between a first photodiode (Figure 2B, element 130 and paragraphs 10 and 27) and a second photodiode (Figure 2B, element 210 and paragraphs 10 and 27). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Buchter with the filter of Bartur. The motivation would have been to insure that wavelengths outside the desired wavelength are filtered out (Bartur paragraph 27).

Regarding claim 6, Buchter teaches the limitations of the base claim 1. Buchter does not teach that the first and second photodiodes are packaged within a TO can. Bartur teaches a laser (Figure 2B, element 224 and paragraphs 10 and 27) and photodiodes (Figure 2B, elements 130 and 210 and paragraphs 10 and 27) that are packaged within a transistor outline can (paragraph 22). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Buchter with the TO can of Bartur. The motivation would have been to ease the mounting of the optical components (Bartur paragraph 22).

Claims 7, 8, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter.

Regarding claim 7, Bartur teaches an optic triplexer (Figure 2B and paragraph 10) comprising an emitting laser (Figure 2B, element 224 and paragraphs 10 and 27) for transmitting a 1310 nm optical signal (paragraph 27), a first photodiode (Figure 2B, element 130 and paragraphs 10 and 27) for receiving a 1490 nm optical signal (paragraph 27), and a second photodiode (Figure 2B, element 210 and paragraphs 10 and 27) for receiving a 1550 nm signal (paragraph 27), wherein the first and second photodiodes are monolithically integrated on a substrate (Figure 2D, element 212 and paragraph 10). Bartur does not teach a 1310 +/-10nm reflective thin film filter located between the emitting laser and the first photodiode. Buchter teaches a 1310 +/-10nm reflective thin film filter (Figure 3, element 123 and column 5, lines 14-30) located between an emitting laser (141) and a photodiode (111). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bartur with the filter of Buchter. The motivation would have been to insure that wavelengths outside the desired wavelength are filtered out (Bartur paragraph 27).

Regarding claim 8, Bartur in view of Buchter teaches the limitations of the base claim 7. Bartur also teaches that the emitting laser is monolithically integrated on the substrate (Figure 2D, element 212 and paragraph 10).

Regarding claim 13, Bartur in view of Buchter teaches the limitations of the base claim 7. Bartur also teaches that the triplexer also comprises a 1490 nm thin film filter

Art Unit: 2883

(Figure 2C, element 213 and paragraph 27) located between the first photodiode and the second photodiode.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter as applied to claim 7 above, and further in view of Kondo.

Regarding claim 9, Bartur in view of Buchter teaches the limitations of base claim 7. Bartur does not teach that the emitting laser is placed on the first photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter as applied to claim 7 above, and further in view of US Patent to Eden et al., number 4,110,778.

Regarding claims 10 and 11, Bartur in view of Buchter teaches the limitations of base claim 7. Bartur does not teach that the first and second photodiodes have cutoff wavelengths dependent on the relative concentrations of dopants in the substrate. Eden teaches a photodiode with a cutoff wavelength dependent on the dopant concentration in the substrate (column 1, lines 56-68). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cutoff wavelength characteristics taught by Eden in the photodiodes of Bartur. The motivation

Art Unit: 2883

would have been to save costs, since this cutoff wavelength characteristic is in line with industry standards.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter as applied to claim 7 above, and further in view of US Pre Grant Publication to Hwang et al, number 2002/0163952.

Regarding claim 14, Bartur in view of Buchter teaches the limitations of the base claim 7. Bartur does not teach that the laser is a vertical cavity surface emitting laser (VCSEL). Hwang teaches a multiplexing system (paragraph 20) incorporating VCSELs (paragraph 23). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a VCSEL laser, as taught by Huang, in the triplexer of Bartur. The motivation would have been to obtain any of the following parameters: a low threshold current, a single longitudinal mode, a circular output beam profile, and a smaller divergence angle (Hwang paragraph 12).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter as applied to claim 7 above, and further in view of US Pre Grant Publication to Kuramata, number 2003/0113053..

Regarding claim 15, Bartur in view of Buchter teaches the limitations of the base claim 7. Bartur does not teach that the substrate is an InGaAs substrate. Kuramata teaches that InGaAs substrates are widely used as the substrates of semiconductor lasers (paragraph 177). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an InGaAs substrate, as taught by Kuramata, as the

Art Unit: 2883

substrate in the triplexer of Bartur. The motivation would have been to produce the triplexer economically.

Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter and in view of Kondo.

Regarding claim 16, Bartur teaches the provision of a substrate (Figure 2D, element 212 and paragraph 10), the monolithical formation on the substrate of a photodiode (Figure 2B, element 210 and paragraphs 10 and 27), the monolithical formation on the substrate of another photodiode (Figure 2B, element 130 and paragraphs 10 and 27), and the monolithical formation of an emitting laser (Figure 2B, element 224 and paragraphs 10 and 27). Bartur also teaches a thin film filter located between the photodiodes (Figure 2C, element 213 and paragraph 27). Bartur does not teach that the second photodiode is monolithically formed on top of the first photodiode. Bartur also does not teach that the laser is placed/monolithically formed on top of the second photodiode. Furthermore, Bartur does not teach a thin film filter on top of the photodiode before forming the other photodiode. Buchter teaches a second photodiode (Figure 5, element 113a) monolithically formed on top of a first photodiode (113b). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bartur with the placement of photodiodes taught by Buchter. The motivation would have been to save space. This modification would have necessitated that the thin film filter located between the photodiodes, taught by Bartur, would have been formed on top of the first photodiode before the formation of the other photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically

Art Unit: 2883

integrated and placed on top of the top surface of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of the top surface of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Regarding claim 19, Bartur in view of Buchter and in view of Kondo teaches the limitations of the base claim 16. Bartur also teaches the photodiode is capable of receiving a 1550 nm optical signal (Figure 2B, element 210 and paragraphs 10 and 27), that the another photodiode is capable of receiving a 1490 nm optical signal (Figure 2B, element 130 and paragraphs 10 and 27), and that the emitting laser is capable of transmitting a 1310 nm optical signal (Figure 2B, element 224 and paragraphs 10 and 27).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter and in view of Kondo as applied to claim 16 above, and further in view of Hwang.

Regarding claim 20, Bartur in view of Buchter and in view of Kondo teaches the limitations of the base claim 16. Bartur does not teach that the laser is a vertical cavity surface emitting laser (VCSEL). Hwang teaches a multiplexing system (paragraph 20) incorporating VCSELs (paragraph 23). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a VCSEL laser, as taught by Huang, in the triplexer of Bartur. The motivation would have been to obtain any of the following

Art Unit: 2883

parameters: a low threshold current, a single longitudinal mode, a circular output beam profile, and a smaller divergence angle (Hwang paragraph 12).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Buchter and in view of Kondo as applied to claim 16 above, and further in view of Kuramata.

Regarding claim 21, Bartur in view of Buchter and in view of Kondo teaches the limitations of the base claim 16. Bartur does not teach that the substrate is an InGaAs substrate. Kuramata teaches that InGaAs substrates are widely used as the substrates of semiconductor lasers (paragraph 177). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an InGaAs substrate, as taught by Kuramata, as the substrate in the triplexer of Bartur. The motivation would have been to produce the triplexer economically.

Claims 22, 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Applicants Admitted Prior Art (AAPA) and in view of Buchter.

Regarding claims 22, 23, 25, and 26, Bartur teaches an optic triplexer which includes an emitting laser capable of transmitting a 1310 nm signal, a first photodiode capable of receiving a 1490 nm signal, and a second photodiode capable of receiving a 1550 nm signal, wherein the laser and photodiodes are each monolithically integrated on a substrate. Bartur does not teach that the triplexer is incorporated by an optical network terminal (ONT) which, along with an optical line terminal (OLT), is part of a passive optical network. Bartur also does not teach a thin film filter located between the

Art Unit: 2883

emitting laser and one of the first and second photodiodes. AAPA teaches a passive optical network (Figure 1) comprising an OLT (element 106) and an ONT (element 110) that incorporates an optic triplexer (element 102). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the passive optical network of AAPA in the implementation of the triplexer of Bartur. The motivation would have been to use the triplexer to deliver useful information, such as voice, video, and data, which would not be possible if the triplexer were not part of such a network. Buchter teaches a thin film filter (Figure 3, element 123 and column 5, lines 14-30) located between an emitting laser (141) and a photodiode (111). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bartur with the filter of Buchter. The motivation would have been to insure that wavelengths outside the desired wavelength are filtered out (Bartur paragraph 27).

Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of AAPA and in view of Buchter as applied to claims 22 and 25 above, respectively, and further in view of Kondo.

Regarding claims 24 and 27, Bartur in view of AAPA and in view of Buchter teaches the limitations of the base claims 22 and 25, respectively. Bartur does not teach that the laser is placed on the first photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of one of the photodiodes as taught by Kondo. The

Art Unit: 2883

motivation would have been to save space, since this implementation would produce a more compact triplexer.

Allowable Subject Matter

The indicated allowability of now canceled claims 4, 12, 17, 31, and 33, incorporated into newly amended claims 1, 7, 16, 28, and 32, respectively, is withdrawn in view of the newly discovered reference(s) to Buchter. Rejections based on the newly cited reference(s) are found above.

Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 18, Bartur in view of Buchter and in view of Kondo teaches the limitations of the base claim 16. However, Bartur, neither alone or in combination with the prior art of record, neither discloses nor renders obvious the formation of a thin film filter on top of the second photodiode precedes the placing/monolithical formation of the emitting laser.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB

A handwritten signature in black ink, appearing to read "Brian Healy". The signature is fluid and cursive, with the first name "Brian" written in a large, stylized "B" and the last name "Healy" written in a more standard cursive script.

Brian Healy
Primary Examiner